

\* ss-specific exonuclease, d they are also not related to her fungal  
and plant nucleases with ss-specific endonuclease activity such...  
?ds

Set	Items	Description
S1	0	(FERTILITY (W) ASSOCIATED (W) ANTIGEN) (S) (GENE OR DNA OR VECTOR)
S2	0	(FERTILITY (W) ASSOCIATED (W) ANTIGEN) AND (GENE OR DNA OR VECTOR)
S3	12	(FERTILITY (W) ASSOCIATED (W) ANTIGEN)
S4	6	RD (unique items)
S5	52	(DNASE (W) I (W) LIKE) (S) (GENE OR DNA)
S6	21	RD (unique items)

?logoff

```
06dec02 09:51:19 User259876 Session D443.2
$2.61 0.816 DialUnits File155
$4.41 21 Type(s) in Format 3
$4.41 21 Types
$7.02 Estimated cost File155
$4.06 0.725 DialUnits File5
$10.50 6 Type(s) in Format 3
$10.50 6 Types
$14.56 Estimated cost File5
$7.50 0.833 DialUnits File73
$7.50 Estimated cost File73
OneSearch, 3 files, 2.374 DialUnits FileOS
$1.30 TELNET
$30.38 Estimated cost this search
$30.77 Estimated total session cost 2.476 DialUnits
```

### Status: Signed Off. (7 minutes)

### Status: Path 1 of [Dialog Information Services via Modem]

### Status: Initializing TCP/IP using (UseTelnetProto 1 ServiceID pto-dialog)  
Trying 31060000009999...Open

DIALOG INFORMATION SERVICES

PLEASE LOGON:

\*\*\*\*\* HHHHHHHH SSSSSSS?

### Status: Signing onto Dialog

\*\*\*\*\*

ENTER PASSWORD:

\*\*\*\*\* HHHHHHHH SSSSSSS? \*\*\*\*\*

Welcome to DIALOG

### Status: Connected

Dialog level 02.11.01D

Last logoff: 04dec02 17:21:28

Logon file001 06dec02 09:45:13

\*\*\* ANNOUNCEMENT \*\*\*

\*\*\*

--File 515 D&B Dun's Electronic Business Directory is now online completely updated and redesigned. For details, see HELP NEWS 515.

\*\*\*

--File 990 - NewsRoom now contains May 2002 to present records.  
File 993 - NewsRoom archive contains 2002 records from January 2002-April 2002. To search all 2002 records, BEGIN 990,993 or B NEWS2002.

\*\*\*

--Alerts have been enhanced to allow a single Alert profile to be stored and run against multiple files. Duplicate removal is available across files and for up to 12 months. The Alert may be run according to the file's update frequency or according to a custom calendar-based schedule. There are no additional prices for these enhanced features. See HELP ALERT for more information.

\*\*\*

--U.S. Patents Fulltext (File 654) has been redesigned with new search and display features. See HELP NEWS 654 for information.

\*\*\*

--Connect Time joins DialUnits as pricing options on Dialog. See HELP CONNECT for information.

\*\*\*

--CLAIMS/US Patents (Files 340,341, 942) have been enhanced with both application and grant publication level in a single record. See HELP NEWS 340 for information.

\*\*\*

--SourceOne patents are now delivered to your email inbox as PDF replacing TIFF delivery. See HELP SOURCE1 for more information.

\*\*\*

--Important news for public and academic libraries. See HELP LIBRARY for more information.

\*\*\*

--Important Notice to Freelance Authors--  
See HELP FREELANCE for more information

\*\*\*

For information about the access to file 43 please see Help News43.

\*\*\*

NEW FILES RELEASED

\*\*\*Dialog NewsRoom - Current 3-4 months (File 990)

\*\*\*Dialog NewsRoom - 2002 Archive (File 993)

\*\*\*Dialog NewsRoom - 2001 Archive (File 994)

\*\*\*Dialog NewsRoom - 2000 Archive (File 995)

\*\*\*TRADEMARKSCAN-Finland (File 679)

\*\*\*TRADEMARKSCAN-Norway (File 678)  
\*\*\*TRADEMARKSCAN-Sweden (File 675)

\*\*\*

#### UPDATING RESUMED

\*\*\*Delphes European Business (File 481)

\*\*\*

#### RELOADED

\*\*\*D&B Dun's Electronic Business Directory (File 515)

\*\*\*U.S. Patents Fulltext 1976-current (File 654)

\*\*\*Population Demographics (File 581)

\*\*\*Kompas Western Europe (File 590)

\*\*\*D&B - Dun's Market Identifiers (File 516)

#### REMOVED

##### CSA Files:

\*\*\*Abstracts in New Technologies and Engineering (File 238)

\*\*\*Aerospace Database (File 108)

\*\*\*Aluminium Industry Abstracts (File 33)

\*\*\*Applied Social Sciences Index and Abstracts (File 232)

\*\*\*Aquatic Sciences and Fisheries Abstracts (File 44)

\*\*\*ARTbibliographies Modern (File 56)

\*\*\*Ceramic Abstracts (File 335)

\*\*\*Conference Papers Index (File 77)

\*\*\*Engineered Materials Abstracts (File 293)

\*\*\*ISMEC: Mechanical Engineering Abstracts (File 14)

\*\*\*Life Sciences Collection (File 76)

\*\*\*Linguistics and Language Behavior Abstracts (File 36)

\*\*\*LISA (Library & Information Science Abstracts) (File 61)

\*\*\*Materials Business File (File 269)

\*\*\*METADEX: Metals Science (File 32)

\*\*\*Oceanic Abstracts (File 28)

\*\*\*Pollution Abstracts (File 41)

\*\*\*Sociological Abstracts (File 37)

\*\*\*Water Resources Abstracts (File 117)

##### Other files:

\*\*\*Chicago Tribune (File 632)

\*\*\*Fort Lauderdale Sun Sentinel (File 497)

\*\*\*The Orlando Sentinel (File 705)

\*\*\*Newport News Daily Press (File 747)

\*\*\*U.S. Patents Fulltext 1980-1989 (File 653)

\*\*\*Washington Post (File 146)

\*\*\*Books in Print (File 470)

\*\*\*Court Filings (File 793)

\*\*\*Publishers, Distributors & Wholesalers of the U.S. (File 450)

\*\*\*State Tax Today (File 791)

\*\*\*Tax Notes Today (File 790)

\*\*\*Worldwide Tax Daily (File 792)

\*\*\*New document supplier\*\*\*

IMED has been changed to INFOTRIE (see HELP OINFOTRI)

>>> Enter BEGIN HOMEBASE for Dialog Announcements <<<  
>>> of new databases, price changes, etc. <<<

\*\*\*\*

KWIC is set to 50.

HIGHLIGHT set on as '\*'

\* \*\*

\*\*

File 1:ERIC 1966-2002/Nov 11

(c) format only 2002 The Dialog Corporation

Set Items Description

--- ----

Cost is in DialUnits

?b 155, 5, 73

06dec02 09:45:21 User 259876 Session D443.1  
\$0.36 0.103 DialUnits File1  
\$0.36 Estimated cost File1  
\$0.03 TELNET  
\$0.39 Estimated cost this search  
\$0.39 Estimated total session cost 0.103 DialUnits

SYSTEM:OS - DIALOG OneSearch

File 155:MEDLINE(R) 1966-2002/Nov W3

**\*File 155: For updating information please see Help News155. Alert**  
feature enhanced with customized scheduling. See HELP ALERT.

File 5:Biosis Previews(R) 1969-2002/Dec W1

(c) 2002 BIOSIS

**\*File 5: Alert feature enhanced for multiple files, duplicates**  
removal, customized scheduling. See HELP ALERT.

File 73:EMBASE 1974-2002/Dec W1

(c) 2002 Elsevier Science B.V.

**\*File 73: Alert feature enhanced for multiple files, duplicates**  
removal, customized scheduling. See HELP ALERT.

Set	Items	Description
---	-----	-----
?s (fertility (w)		associated (w) antigen) same (gene or DNA or vector)
>>>		Invalid syntax
?s (fertility (w)		associated (w) antigen) (s) (gene or DNA or vector)
	106800	FERTILITY
	2491351	ASSOCIATED
	945438	ANTIGEN
	1942574	GENE
	1824761	DNA
	196210	VECTOR
S1	0	(FERTILITY (W) ASSOCIATED (W) ANTIGEN) (S) (GENE OR DNA OR VECTOR)
?s (fertility (w)		associated (w) antigen) and (gene or DNA or vector)
	106800	FERTILITY
	2491351	ASSOCIATED
	945438	ANTIGEN
	12	FERTILITY (W) ASSOCIATED (W) ANTIGEN
	1942574	GENE
	1824761	DNA
	196210	VECTOR
S2	0	(FERTILITY (W) ASSOCIATED (W) ANTIGEN) AND (GENE OR DNA OR VECTOR)
?s (fertility (w)		associated (w) antigen)
	106800	FERTILITY
	2491351	ASSOCIATED
	945438	ANTIGEN
S3	12	(FERTILITY (W) ASSOCIATED (W) ANTIGEN)
?rd		
...		completed examining records
S4	6	RD (unique items)
?t s4/3,k/all		

4/3,K/1 (Item 1 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

10698089 20244752 PMID: 10784166

**Artificial insemination outcomes in beef females using bovine sperm with a detectable \*fertility\*-\*associated\* \*antigen\*.**

Sprott L R; Harris M D; Forrest D W; Young J; Zhang H M; Oyarzo J N; Bellin M E; Ax R L

Department of Animal Science, Texas A&M University, College Station 77843, USA. l-sprott@tamu.edu

Journal of animal science (UNITED STATES) Apr 2000, 78 (4) p795-8, ISSN 0021-8812 Journal Code: 8003002

Document type: Journal      icle  
Languages: ENGLISH  
Main Citation Owner: NLM  
Record type: Completed

**Artificial insemination outcomes in beef females using bovine sperm with a detectable \*fertility\*--\*associated\* \*antigen\*.**

... samples from 25 bulls that had passed a breeding soundness evaluation were analyzed for the presence or absence of a 31-kDa protein, known as \*fertility\*--\*associated\* \*antigen\* (FAA), on spermatozoal membranes. Eighteen bulls had FAA on sperm (FAA-positive) and seven were devoid of FAA on sperm (FAA-negative). A single ejaculate...

... synchronized estrus are higher when using semen from bulls with detectable FAA on spermatozoal membranes compared to semen from bulls devoid of FAA on membranes. \*Fertility\*--\*associated\* \*antigen\* is an important determinant for fertility potential of sperm from bulls to be used in AI breeding programs.

4/3,K/2      (Item 2 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

10414246    99400506    PMID: 10471474

**Purification and characterization of \*fertility\*--\*associated\* \*antigen\* (FAA) in bovine seminal fluid.**

McCauley T C; Zhang H; Bellin M E; Ax R L

Department of Animal Sciences, University of Arizona, Tucson, Arizona 85721-0038, USA.

Molecular reproduction and development (UNITED STATES)    Oct 1999,    54  
(2) p145-53, ISSN 1040-452X    Journal Code: 8903333

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

**Purification and characterization of \*fertility\*--\*associated\* \*antigen\* (FAA) in bovine seminal fluid.**

... 21.5-kDa that were associated with increased fertility of bulls. The purpose of this study was to identify the 31-kDa HBP known as \*fertility\*--\*associated\* \*antigen\* (FAA). FAA was isolated by heparin-affinity chromatography and reversed-phase high performance liquid chromatography near homogeneity. Biochemical characterization indicated that FAA was an unglycosylated...

Chemical Name: Antigens, Surface; Fertility Agents, Male; Membrane Glycoproteins; \*fertility\*--\*associated\* \*antigen\*

4/3,K/3      (Item 3 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

09956340    98403921    PMID: 9734852

**\*Fertility\*--\*associated\* \*antigen\* on bull sperm indicates fertility potential.**

Bellin M E; Oyarzo J N; Hawkins H E; Zhang H; Smith R G; Forrest D W; Sprott L R; Ax R L

Department of Animal Sciences, University of Arizona, Tucson 85721, USA.

Journal of animal science (UNITED STATES)    Aug 1998,    76 (8) p2032-9,  
ISSN 0021-8812    Journal Code: 8003002

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

**\*Fertility\*--\*associated\* \*antigen\* on bull sperm indicates fertility potential.**

A 30-kDa heparin-binding protein named \*fertility\*--\*associated\* \*antigen\*

(FAA) was identified sperm membranes of beef bulls with greater fertility potential. In a survey of 2,191 beef bulls, 88% had FAA present

...  
Chemical Name: Antigens, Surface; Membrane Glycoproteins; \*fertility\*-  
\*associated\* \*antigen\*; Heparin

4/3,K/4 (Item 1 from file: 5)  
DIALOG(R)File 5:Biosis Previews(R)  
(c) 2002 BIOSIS. All rts. reserv.

12930369 BIOSIS NO.: 200100137518

**Identification of a heparin-binding protein in bovine seminal fluid as tissue inhibitor of metalloproteinases-2.**

AUTHOR: McCauley T C; Zhang H M; Bellin M E; Ax R L(a)

AUTHOR ADDRESS: (a)Department of Animal Sciences, University of Arizona, Tucson, AZ, 85721-0038: royax@ag.arizona.edu\*\*USA

JOURNAL: Molecular Reproduction and Development 58 (3):p336-341 March, 2001

MEDIUM: print

ISSN: 1040-452X

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

SUMMARY LANGUAGE: English

...ABSTRACT: sperm extracts by a monoclonal antibody, M1, is a diagnostic indicator of fertility differences among bulls producing normal semen. We recently identified a 31 kDa \*fertility\*-\*associated\* \*antigen\* in bovine seminal fluid as a unique DNase I-like protein. We now report purification and identification of a 24 kDa seminal heparin-binding protein...

4/3,K/5 (Item 2 from file: 5)  
DIALOG(R)File 5:Biosis Previews(R)  
(c) 2002 BIOSIS. All rts. reserv.

12571395 BIOSIS NO.: 200000324897

**Bovine \*fertility\*-\*associated\* \*antigen\* (FAA) and a recombinant segment of FAA improve sperm function.**

AUTHOR: Lenz Richard W(a); Zhang Huanmin; Oyarzo Janice N; Bellin Mary E; Ax Roy L

AUTHOR ADDRESS: (a)Sire Power, Inc., Tunkhannock, PA\*\*USA

JOURNAL: Biology of Reproduction 62 (Supplement 1):p137-138 2000

MEDIUM: print

CONFERENCE/MEETING: Thirty-Third Annual Meeting of the Society for the Study of Reproduction Madison, Wisconsin, USA July 15-18, 2000

SPONSOR: Society for the Study of Reproduction

ISSN: 0006-3363

RECORD TYPE: Citation

LANGUAGE: English

SUMMARY LANGUAGE: English

**Bovine \*fertility\*-\*associated\* \*antigen\* (FAA) and a recombinant segment of FAA improve sperm function.**

DESCRIPTORS:

CHEMICALS & BIOCHEMICALS: \*fertility\*-\*associated\* \*antigen\*---

4/3,K/6 (Item 3 from file: 5)  
DIALOG(R)File 5:Biosis Previews(R)  
(c) 2002 BIOSIS. All rts. reserv.

11282599 BIOSIS NO.: 199800063931

**Identification of sites of production of a seminal \*fertility\* \*associated\***

**\*antigen\* (FAA) from ram**  
 AUTHOR: Oyarzo J N; Ax R L  
 AUTHOR ADDRESS: Univ. Arizona, Tucson, AZ\*\*USA  
 JOURNAL: Journal of Animal Science 75 (SUPPL. 1):p220 1997  
 CONFERENCE/MEETING: 89th Annual Meeting of the American Society of Animal Science Nashville, Tennessee, USA July 29-August 1, 1997  
 ISSN: 0021-8812  
 RECORD TYPE: Citation  
 LANGUAGE: English

**Identification of sites of production of a seminal \*fertility\* \*associated\*  
 \*antigen\* (FAA) from rams.**

DESCRIPTORS:

CHEMICALS & BIOCHEMICALS: \*fertility\*--\*associated\* \*antigen\*--  
 ?ds

Set	Items	Description
S1	0	(FERTILITY (W) ASSOCIATED (W) ANTIGEN) (S) (GENE OR DNA OR VECTOR)
S2	0	(FERTILITY (W) ASSOCIATED (W) ANTIGEN) AND (GENE OR DNA OR VECTOR)
S3	12	(FERTILITY (W) ASSOCIATED (W) ANTIGEN)
S4	6	RD (unique items)
?s (DNase (w) I (w) like) same (gene or DNA)		
>>>Invalid syntax		
?s (DNase (w) I (w) like) (s) (gene or DNA)		
	31980	DNASE
	2444038	I
	864901	LIKE
	1942574	GENE
	1824761	DNA
S5	52	(DNASE (W) I (W) LIKE) (S) (GENE OR DNA)
?rd		
...examined 50 records (50)		
...completed examining records		
S6	21	RD (unique items)
?t s6/3,k/all		

**6/3,K/1 (Item 1 from file: 155)**  
 DIALOG(R) File 155:MEDLINE(R)

13611446 21887406 PMID: 11890549

**Cytolethal distending toxins and activation of DNA damage-dependent checkpoint responses.**

Frisan Teresa; Cortes-Bratti Ximena; Thelestam Monica  
 Microbiology and Tumorbiology Center, Karolinska Institutet, Stockholm, Sweden. teresa.frisan@mtc.ki.se  
 International journal of medical microbiology : IJMM (Germany) Feb 2002  
 , 291 (6-7) p495-9, ISSN 1438-4221 Journal Code: 100898849  
 Document type: Journal Article; Review; Review, Tutorial  
 Languages: ENGLISH  
 Main Citation Owner: NLM  
 Record type: Completed

Cytolethal distending toxins (CDTs) are unique among bacterial protein toxins in their ability to cause \*DNA\* damage, due to their functional similarity to the mammalian deoxyribonuclease I (DNase I). The cellular response to CDT intoxication is characterised by activation of \*DNA\* damage-induced checkpoint responses, and the final outcome is cell type dependent. Cells of epithelial origin and normal keratinocytes are arrested in the G2 phase...

... B cells die of apoptosis. CDTs are encoded by three linked genes (cdtA, cdtB and cdtC), and CdtB is the toxin subunit which possesses the \*DNase\* \*I\*-\*like\* activity. All the three genes have to be present in the bacterium in order to produce an active cytotoxin, however cytotoxic Haemophilus ducreyi CDT, purified...

6/3,K/2 (Item 2 from file: 155)

DIALOG(R) File 155:MEDLINE(R)

13476821 21909461 PMID: 11912259

**DNase I-like endonuclease in rat kidney cortex that is activated during ischemia/reperfusion injury.**

Basnakian Alexei G; Ueda Norishi; Kaushal Gur P; Mikhailova Marina V; Shah Sudhir V

Department of Internal Medicine, Division of Nephrology, University of Arkansas for Medical Sciences, 4301 W. Markham Street, Slot 501, Little Rock, AR 72205, USA. basnakianalexeig@uams.edu

Journal of the American Society of Nephrology : JASN (United States)

Apr 2002, 13 (4) p1000-7, ISSN 1046-6673 Journal Code: 9013836

Contract/Grant No.: P01 DK 58324-01A1; DK; NIDDK; R01 DK 47990; DK; NIDDK

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

... cultured NRK-52E rat kidney epithelial cells inhibited DNA fragmentation and attenuated cell death induced by hypoxia/reoxygenation in vitro. The data indicate that the \*DNase\* \*I\*-\*like\* endonuclease may contribute to \*DNA\* fragmentation in reperfused rat kidneys.

6/3,K/3 (Item 3 from file: 155)

DIALOG(R) File 155:MEDLINE(R)

11152506 21165094 PMID: 11263960

**Deletion polymorphism of DNASE1L1, an X-linked \*DNase\* \*I\*-\*like\* \*gene\*, in acid maltase deficiency disorders.**

MalFerrari G; Mirabella M; D'Alessandra Y; Servidei S; Biunno I

Experimental and molecular pathology (United States) Apr 2001, 70 (2)

p173-4, ISSN 0014-4800 Journal Code: 0370711

Comment on Exp Mol Pathol. 1999 Jun;66(2) 123-30; Comment on PMID 10409440

Document type: Comment; Letter

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

**Deletion polymorphism of DNASE1L1, an X-linked \*DNase\* \*I\*-\*like\* \*gene\*, in acid maltase deficiency disorders.**

6/3,K/4 (Item 4 from file: 155)

DIALOG(R) File 155:MEDLINE(R)

09954297 98382522 PMID: 9714828

**Cloning and characterization of an actin-resistant DNase I-like endonuclease secreted by macrophages.**

Baron W F; Pan C Q; Spencer S A; Ryan A M; Lazarus R A; Baker K P

Department of Molecular Biology, Genentech Inc., 1 DNA Way, South San Francisco, CA 94080, USA. baker.kevin@gene.com

Gene (NETHERLANDS) Jul 30 1998, 215 (2) p291-301, ISSN 0378-1119

Journal Code: 7706761

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

We have cloned human and murine \*DNase\* \*I\*-\*like\* cDNAs, termed LS-DNase, which are expressed at high levels in liver and spleen tissues. LS-DNase expression is highly specific to macrophage populations within...

... human DNase I with actin are not conserved in both human and murine LS-DNase. Consistent with this observation, recombinant human LS-DNase possesses a \*DNA\* hydrolytic activity which, unlike DNase I, is not inhibited by G-actin. The existence of a family of \*DNase\* \*I\*-\*like\* molecules that have tissue-specific expression patterns and the possible role of a macrophage specific DNase are discussed.

6/3,K/5 (Item 5 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

09954296 98382521 PMID: 9714827

**Molecular cloning and characterization of human and murine DNase II.**

Baker K P; Baron W F; Henzel W J; Spencer S A

Department of Molecular Biology, Genentech Inc., 1 DNA Way, South San Francisco, CA 94080, USA. baker.kevin@gene.com

Gene (NETHERLANDS) Jul 30 1998, 215 (2) p281-9, ISSN 0378-1119

Journal Code: 7706761

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

... is a novel enzyme with no homologies to proteins of known function. Surprisingly, *C. elegans* appears to possess a family of DNase II homologs. Unlike \*DNase\* \*I\*-\*like\* enzymes that have tissue-specific expression patterns, huDNase II is ubiquitously expressed at low levels. When huDNase II is expressed in human 293 cells, we...

... of a novel 42-44 kDa glycoprotein; approximately 20-30% of recombinant human DNase II activity is secreted in this system. The secreted enzyme possesses \*DNA\* hydrolytic activity and shares biochemical properties with purified DNase II obtained from other species. We also show that the mechanism by which DNase II cuts \*DNA\* is similar to DNase I in that the enzyme produces nicks rather than double-strand cuts.

6/3,K/6 (Item 6 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

09774983 98200468 PMID: 9541395

**Mutational analysis of human DNase I at the DNA binding interface: implications for DNA recognition, catalysis, and metal ion dependence.**

Pan C Q; Ulmer J S; Herzka A; Lazarus R A

Department of Protein Engineering, Genentech, Inc., South San Francisco, California 94080, USA.

Protein science : a publication of the Protein Society (UNITED STATES)  
Mar 1998, 7 (3) p628-36, ISSN 0961-8368 Journal Code: 9211750

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

Human deoxyribonuclease I (DNase I), an enzyme used to treat cystic fibrosis patients, has been systematically analyzed by site-directed mutagenesis of residues at the \*DNA\* binding interface. Crystal structures of bovine DNase I complexed with two different oligonucleotides have implicated the participation of over 20 amino acids in catalysis or \*DNA\* recognition. These residues have been classified into four groups based on the characterization of over 80 human DNase I variants. Mutations at any of the...

... Asn 170, Tyr 175, and Tyr 211 were also critical for activity, presumably because of their close proximity to the active site, while more peripheral \*DNA\* interactions stemming from 13 other positions were of minimal significance. The relative importance of these 27 positions is

consistent with evolutionary relationships among DNase I across different species, \*DNase\* \*I\*-\*like\* proteins, and bacterial sphingomyelinases, suggesting a fingerprint for a family of \*DNase\* \*I\*-\*like\* proteins. Furthermore, we found no evidence for a second active site that had been previously implicated in Mn2+-dependent \*DNA\* degradation. Finally, we correlated our mutational analysis of human DNase I to that of bovine DNase I with respect to their specific activity and dependence...

6/3,K/7 (Item 7 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

09552876 97460160 PMID: 9314585

**Identification and localization of deoxyribonuclease I in the rat ovary.**

Boone D L; Tsang B K

Department of Obstetrics & Gynaecology and Cellular & Molecular Medicine,  
University of Ottawa, Ontario, Canada.

Biology of reproduction (UNITED STATES) Oct 1997, 57 (4) p813-21,  
ISSN 0006-3363 Journal Code: 0207224

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

Our objective was to identify the endonuclease responsible for \*DNA\* degradation in the ovary and determine its localization relative to the developmental state of ovarian follicles. Immature rats were treated with diethylstilbestrol (DES; DES group...

... eCG (eCG group) or DES + eCG + hCG (hCG group). Nuclei of the eCG and hCG but not the DES group contained a 32/34-kDa \*DNase\* \*I\*-\*like\* endonuclease activity that was Ca2+/Mg(2+)-dependent, stimulated by Mn2+, optimal at pH 7, and identified by anti-DNase I antibody. G-actin, Zn2...

... acid, and sodium aurothiomalate, but not iodoacetic acid, inhibited the activity. Addition of eCG nuclear protein extracts to nuclei from the DES group induced oligonucleosomal \*DNA\* fragmentation, which could be prevented by pretreatment of the extracts with anti-DNase I antibody. DNase I was immunolocalized in nuclei of healthy luteal cells...

...preantral follicles, theca cells, antral follicle oocytes, or testicular spermatocytes. Nuclear extracts of rat kidney, liver, and spleen, and bovine, chicken, and human ovaries displayed \*DNase\* \*I\*-\*like\* activity. These results suggest that an endonuclease indistinguishable from DNase I is responsible for ovarian apoptotic \*DNA\* degradation.

6/3,K/8 (Item 8 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

09543186 97439708 PMID: 9307016

**Purification and properties of DNase gamma from apoptotic rat thymocytes.**

Shiokawa D; Ohyama H; Yamada T; Tanuma S

Department of Biochemistry, Faculty of Pharmaceutical Sciences, Science  
University of Tokyo, Shinjuku-ku, Tokyo 162, Japan.

Biochemical journal (ENGLAND) Sep 15 1997, 326 ( Pt 3) p675-81,  
ISSN 0264-6021 Journal Code: 2984726R

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

We previously identified three distinct \*DNA\* endonucleases, DNases alpha, beta and gamma, present in rat thymocyte nuclei. On the basis of their enzymic and biochemical properties, gamma-type DNase was regarded...

... partially supplied by Mn2+. Of the bivalent metal ions tested, Co2+,

Ni<sup>2+</sup>, Cu<sup>2+</sup> and Zn<sup>2+</sup> inhibited DNase gamma activity. These bivalent cations also suppressed apoptotic \*DNA\* fragmentation in rat thymocytes irradiated by X-rays. The same order of inhibitory ability was observed for these bivalent metal ions in vivo (in intact cells) and in vitro, suggesting that the suppression of apoptotic \*DNA\* fragmentation at the cellular level is due to the inhibition of DNase gamma. DNase gamma activity was found to exist at high levels in spleen...

...was present in brain, heart or pancreas. On the basis of these findings, together with previous data, we conclude that DNase gamma is a novel \*DNase\* \*I\*-\*like\* endonuclease responsible for internucleosomal cleavage of chromatin during thymic apoptosis.

6/3,K/9 (Item 9 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

09456741 97349121 PMID: 9205125

**Identification, localization, and expression of two novel human genes similar to deoxyribonuclease I.**

Rodriguez A M; Rodin D; Nomura H; Morton C C; Weremowicz S; Schneider M C  
Department of Medicine, Brigham and Women's Hospital and Harvard Medical School, Boston, Massachusetts 02115, USA.

Genomics (UNITED STATES) Jun 15 1997, 42 (3) p507-13, ISSN 0888-7543 Journal Code: 8800135

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

...DNAS1L1 is expressed highest in heart and skeletal muscle, while DNase I is expressed in the pancreas, parotid gland, and kidney. Thus, to date, four \*DNase\* \*I\*-\*like\* genes that show different tissue expression patterns are known. A comparison of DNAS1L1, DNAS1L2, and DNAS1L3 with the well-characterized DNase I suggests that the DNAS1L proteins are unlikely to be glycosylated or bind actin; however, catalytic and calcium- and \*DNA\*-binding residues are conserved, and potentially cleavable signal peptides are present among all these proteins. This analysis also identifies regions of high conservation among these...

6/3,K/10 (Item 10 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

09324808 97223487 PMID: 9070308

**Cloning and characterization of a novel human DNase.**

Zeng Z; Parmelee D; Hyaw H; Coleman T A; Su K; Zhang J; Gentz R; Ruben S; Rosen C; Li Y

Human Genome Sciences, Inc., Rockville, Maryland 20850, USA.

Biochemical and biophysical research communications (UNITED STATES) Feb 13 1997, 231 (2) p499-504, ISSN 0006-291X Journal Code: 0372516

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

The therapeutic significance of recombinant human DNase I in treating the patients with cystic fibrosis has risen our interests in identifying other human \*DNase\* \*I\*-\*like\* enzymes to study their biological significance. Here we described our work of cloning and characterization of a novel \*gene\*, which encodes a human protein homologous to human DNase I. A full length cDNA clone of this \*gene\* consists of 1290 bp, encoding a polypeptide of 306 amino acids. The deduced amino acid sequence of this novel human DNase (nhDNase) is 45% identical...

... band of about 33 kD molecular weight analyzed by SDS-PAGE. The DNase activity of nhDNase was demonstrated by assay of hydrolysis of S.S.\*DNA\*.

Its activity was dependent upon the presence of divalent metal ions, calcium and magnesium. However, unlike bovine pancreas DNase I, nhDNase was not inhibited by...

6/3,K/11 (Item 11 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

09174087 97068778 PMID: 8911966

**Distribution of deoxyribonuclease I (DNase I) and p53 in rat testis and their correlation with apoptosis.**

Stephan H; Polzar B; Rauch F; Zanotti S; Ulke C; Mannherz H G

Abteilung für Anatomie und Embryologie, Ruhr-Universität Bochum, Germany.

Histochemistry and cell biology (GERMANY) Oct 1996, 106 (4) p383-93,  
ISSN 0948-6143 Journal Code: 9506663

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

... activity of a  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ -dependent endonuclease. Recent data indicate that deoxyribonuclease I (DNase I) is identical to the apoptotic endonuclease responsible for the internucleosomal \*DNA\* degradation. Previous results using primers specific for rat parotid DNase I in a polymerase chain reaction have demonstrated the presence of DNase I-specific \*gene\* transcripts in rat testis. We have therefore analysed the presence of DNase I in rat testis by immunohistochemistry and biochemical procedures. The presence of \*DNase\* \*I\*-\*like\* endonucleolytic activity was verified enzymatically. DNase I immunoreactivity was detected in the nuclei of a few spermatogonia and premeiotic spermatocytes, but within the acrosomic vesicle of all spermatids and spermatozoa. In situ hybridisation revealed the accumulation of DNase I-specific \*gene\* transcripts in a small number of spermatogonia and/or premeiotic spermatocytes, but in a large number of spermatids. The occurrence of apoptotic \*DNA\* fragmentation was investigated by in situ end-labelling (ISEL) of free 3'-OH \*DNA\* ends and gave positive nuclear staining of only very few spermatogonia. No positive ISEL staining was observed in maturing spermatids and/or spermatozoa. These data...

... spermatocytes entering meiosis is controlled by apoptosis. In addition, they demonstrated that mature sperm cells are equipped with an endonuclease that might be used for \*DNA\* degradation during their elimination at later stages of their life span. The expression and distribution of the tumour suppressor \*gene\* product, p53, was analysed by immunostaining. Strong p53 immunoreactivity was observed in the nuclei of a number of spermatogonia, of some premeiotic spermatocytes and probably...

... or the ductus epididymidis. It is therefore proposed that at later stages of spermatid maturation most probably before their release as mature spermatozoa-the p53 \*gene\* product was either degraded or retained in residual bodies, since p53 immunoreactivity was found to be concentrated within these organelles.

6/3,K/12 (Item 12 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

08857997 96194910 PMID: 8654957

**Cloning of a \*gene\* encoding a \*DNase\* \*I\*-\*like\* endonuclease in the human Xq28 region.**

Pergolizzi R; Appierto V; Bosetti A; DeBellis G L; Rovida E; Biunno I  
Istituto Tecnologie Biomediche Avanzate, Milano, Italy.

Gene (NETHERLANDS) Feb 12 1996, 168 (2) p267-70, ISSN 0378-1119  
Journal Code: 7706761

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: N  
Record type: Completed

**Cloning of a \*gene\* encoding a \*DNase\* \*I\*-\*like\* endonuclease in the human Xq28 region.**

6/3,K/13 (Item 13 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

08736903 96081217 PMID: 8541839

**A muscle-specific \*DNase\* \*I\*-\*like\* \*gene\* in human Xq28.**

Parrish J E; Ciccodicola A; Wehhert M; Cox G F; Chen E; Nelson D L  
Department of Molecular and Human Genetics, Baylor College of Medicine,  
Houston, TX, USA.

Human molecular genetics (ENGLAND) Sep 1995, 4 (9) p1557-64, ISSN  
0964-6906 Journal Code: 9208958

Contract/Grant No.: 2P50 HG000201; HG; NHGRI; 5P30 HG00210; HG; NHGRI

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

**A muscle-specific \*DNase\* \*I\*-\*like\* \*gene\* in human Xq28.**

6/3,K/14 (Item 14 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

08731588 96081915 PMID: 7499373

**Involvement of DNase II in nuclear degeneration during lens cell differentiation.**

Torriglia A; Chaudun E; Chany-Fournier F; Jeanny J C; Courtois Y; Counis  
M F

XR 118 INSERM, Association Claude Bernard, Paris, France.

Journal of biological chemistry (UNITED STATES) Dec 1 1995, 270 (48)  
p28579-85, ISSN 0021-9258 Journal Code: 2985121R

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

... three major bands (60,23, and 18 kDa), which are not detected, at least for two of them (60 and 23 kDa), in epithelial cells. \*DNase\* \*I\*-\*like\* -nuclease pattern in fiber cells shows a single 32-kDa band, while several bands can be detected in epithelial cells. Immunocytochemistry studies show both nucleases...

... of epithelial cells, but it appears strikingly concentrated in the nuclei of fibers. DNase I is always concentrated in nuclei of epithelial and fiber cells. \*DNA\* degradation observed in agarose gels shows that DNase II-activating medium cleaves the \*DNA\* from fiber cells more efficiently than DNase I-activating buffer. In addition, DNase II antibody is able to prevent this degradation. These results suggest a...

6/3,K/15 (Item 15 from file: 155)  
DIALOG(R) File 155:MEDLINE(R)

08322813 95080447 PMID: 7988739

**DNase-I-like enzyme from the carp liver--inhibition by muscle and endogenous actin.**

Malicka-Blaszkiwicz M; Majcher I; Nowak D

Institute of Biochemistry, University of Wroclaw, Poland.

International journal of biochemistry (ENGLAND) Sep 1994, 26 (9)  
p1147-55, ISSN 0020-711X Journal Code: 0250365

Document type: Journal title  
Languages: ENGLISH  
Main Citation Owner: NLM  
Record type: Completed

1. \*DNase\*-\*I\*-\*like\* activity occurs in the carp (*Cyprinus carpio*) liver cytosol (supernatant 105,000 g). 2. The enzyme resembles DNase I from bovine pancreas in respect to the molecular mass (approximately 31 kDa), pH (7.4) and ion requirements (Mg<sup>2+</sup>, Ca<sup>2+</sup>) and the ability to degrade native as well as denatured \*DNA\*. 3. As judged by comparison of DNase zymograms obtained after native- and SDS-PAGE, the enzyme occurs in the three molecular forms of similar molecular...

6/3,K/16 (Item 16 from file: 155)  
DIALOG(R)File 155:MEDLINE(R)

08013863 94152358 PMID: 8109316

**Reverse transformation, genome exposure, and cancer.**

Puck T T; Krystosek A

Eleanor Roosevelt Institute, Denver, Colorado 80206.

Advances in cancer research (UNITED STATES) 1993, 62 p125-51, ISSN 0065-230X Journal Code: 0370416

Document type: Journal Article; Review; Review, Academic

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

... restored to a more normal phenotype has been reviewed. The primary causative action is ascribed to the genome exposure reaction in which a peripheral nuclear \*DNA\* region is restored to high sensitivity to \*DNase\* \*I\*, \*like\* that in normal cells. Various aspects of genome exposure around the nucleoli and the nuclear periphery are considered. The special role of the cytoskeleton in...

6/3,K/17 (Item 17 from file: 155)  
DIALOG(R)File 155:MEDLINE(R)

06959246 91254457 PMID: 2095786

**Rat liver DNase I-like activity and its interaction with actin.**

Malicka-Blaszkiwicz M

Institute of Biochemistry, University of Wroclaw, Poland.

Zeitschrift fur Naturforschung. C, Journal of biosciences (GERMANY)

Nov-Dec 1990, 45 (11-12) p1165-70, ISSN 0341-0382 Journal Code: 8912155

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

... the inhibition of standard crystalline DNase I. Actin was purified from rat liver nucleoplasm by Sephadex filtration. Accompanying the considerable amount of actin an endogenous \*DNase\* \*I\* \*like\* activity was found in rat liver cytosol and nucleoplasm. It was shown, that similarly to DNase I from bovine pancreas the liver DNase was inhibited...

...and avian skeletal muscle actin as well as by endogenous liver actin, as verified by electrophoresis of DNase containing extracts on polyacrylamide gels with incorporated \*DNA\*.

6/3,K/18 (Item 18 from file: 155)  
DIALOG(R)File 155:MEDLINE(R)

05171680 86242734 PMID: 3013242

**An immunochemical study    Neurospora nucleases.**

Fraser M J; Chow T Y; Cohen H; Koa H

Biochemistry and cell biology = Biochimie et biologie cellulaire (CANADA)

Feb 1986, 64 (2) p106-16, ISSN 0829-8211 Journal Code: 8606068

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: Completed

Nucleases derived from *Neurospora crassa* mycelia with neutral single-strand (ss) endodeoxyribonuclease activity have been examined by immunochemical techniques and by sodium dodecyl sulfate - \*DNA\* gel electrophoresis. All of the intracellular nucleases, which have different divalent metal ion requirements, different strand specificities with single- and double-strand \*DNA\*, different modes of action on \*DNA\* and RNA, and other distinguishing characteristics, are immunologically related to *Neurospora* endo-exonuclease. The evidence indicates that these enzymes are derived from one or more...

...are very likely artifacts resulting from uncontrolled proteolysis during extraction and isolation. The intracellular forms of *Neurospora* endo-exonuclease are immunologically cross-active with ss-\*DNA\*-binding nucleases isolated from *Aspergillus nidulans* and *Saccharomyces cerevisiae*. They are not immunochemically related to two extracellular *Neurospora* nucleases, the pancreatic \*DNase\*-I-\*like\* DNase A and a ss-specific exonuclease, and they are also not related to other fungal and plant nucleases with ss-specific endonuclease activity such...

**6/3,K/19            (Item 1 from file: 5)**

DIALOG(R)File 5:Biosis Previews(R)

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10240672 BIOSIS NO.: 199698695590

**Cloning of a \*gene\* encoding a \*DNase\* \*I\*-\*like\* endonuclear in the human Xq28 region.**

AUTHOR: Pergolizzi Rossana; Appierto Valentina; Bosetti Alessandro;

Debellis Gianluca; Rovida Ermanna; Biunno Ida

AUTHOR ADDRESS: CNR ITBA, Via Ampere 56, 20131 Milano\*\*Italy

JOURNAL: Gene (Amsterdam) 168 (2):p267-270 1996

ISSN: 0378-1119

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

**Cloning of a \*gene\* encoding a \*DNase\* \*I\*-\*like\* endonuclear in the human Xq28 region.**

**6/3,K/20            (Item 2 from file: 5)**

DIALOG(R)File 5:Biosis Previews(R)

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10091425 BIOSIS NO.: 199598546343

**Identification of a deoxyribonuclease I-like endonuclease in rat granulosa and luteal cell nuclei.**

AUTHOR: Boone David L; Yan William; Tsang Benjamin K(a)

AUTHOR ADDRESS: (a)Reproductive Biol. Unit, Loeb Med. Res. Inst., Ottawa

Civic Hosp., 1053 Carling Ave., Ottawa, ON\*\*Canada

JOURNAL: Biology of Reproduction 53 (5):p1057-1065 1995

ISSN: 0006-3363

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Apoptosis, a process recently implicated as the cellular

mechanism underlying ovarian follicular atresia and luteal regression, is characterized by the internucleosomal degradation of \*DNA\* by a Ca-2+/Mg-2+-dependent endonuclease. Although hormones and growth factors have been demonstrated to modulate the \*DNA\* degradation associated with ovarian follicular apoptosis, the nature and identity of the endonuclease involved is not known. Ca-2+/Mg-2+-dependent endonuclease activity has...

...and exposed to Ca-2+ and Mg-2+ in vitro. Nuclei from rat ovaries primed with eCG and hCG, but not DES, substantially degraded their \*DNA\* in an apoptotic fashion, and this \*DNA\* degradation was Ca-2+/Mg-2+ dependent and inhibited by Zn-2+. Protein extracts from the nuclei of DES-, eCG-, and hCG-treated rat ovaries...

...found in intact nuclei. These protein extracts were assessed for nuclease activity by zymography, and three nuclease activities were identified depending on the type of \*DNA\* used in the gel and the electrophoresis conditions used for protein separation. A doublet of 32/34 kDa was found to have the same developmental pattern and cation dependency as that demonstrated with the plasmid degradation assay and apoptotic \*DNA\* production in intact nuclei. A nuclease activity of 27 kDa was also present but was active only on single-stranded \*DNA\* and was Mg-2+/-, but not Ca-2+/-, dependent. True nuclease activity was distinguished from false positive histone effects by silver staining the \*DNA\* in the zymographic gel, a new technique that avoids the use of isotopically labeled \*DNA\*. The 32/34-kDa activity had molecular size, cation dependency, and optimal substrate and electrophoresis requirements similar to those of DNase I from bovine pancreas. These experiments suggest that the capacity of rat ovarian cells to undergo apoptosis (as measured by \*DNA\* degradation) is developmentally regulated such that differentiated granulosa and luteal cell nuclei, but not undifferentiated granulosa cell nuclei, possess an endogenous \*DNase\* \*I\*-\*like\* endonuclease activity. This \*DNase\* \*I\*-\*like\* endonuclease may be responsible for the characteristic \*DNA\* degradation observed during follicular atresia and luteal regression.

6/3,K/21 (Item 3 from file: 5)

DIALOG(R)File 5: Biosis Previews(R)

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05167184 BIOSIS NO.: 000082007805

**AN IMMUNOCHEMICAL STUDY OF NEUROSPORA-CRASSA NUCLEASES**

AUTHOR: FRASER M J; CHOW T Y-K; COHEN H; KOA H

AUTHOR ADDRESS: DEPARTMENT OF BIOCHEMISTRY, MCGILL UNIVERSITY, MONTREAL QUE. , CANADA H3G 1Y6.

JOURNAL: CAN J BIOCHEM CELL BIOL 64 (2). 1986. 106-116. 1986

FULL JOURNAL NAME: Canadian Journal of Biochemistry and Cell Biology

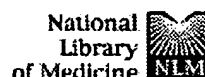
CODEN: CJBBD

RECORD TYPE: Abstract

LANGUAGE: ENGLISH

ABSTRACT: Nucleases derived from *Neurospora crassa* mycelia with neutral single-strand (ss) endodeoxyribonuclease activity have been examined by immunochemical techniques and by sodium dodecyl sulfate-\*DNA\* gel electrophoresis. All of the intracellular nucleases, which have different divalent metal ion requirements, different strand specificities with single- and double-strand \*DNA\*, different modes of action on \*DNA\* and RNA, and other distinguishing characteristics, are immunochemically related to *Neurospora* endo-exonuclease. The evidence indicates that these enzymes are derived from one or more...

...are very likely artifacts resulting from uncontrolled proteolysis during extraction and isolation. The intracellular forms of *Neurospora* endo-exonuclease are immunologically cross-active with ss-\*DNA\*-binding nucleases isolated from *Aspergillus nidulans* and *Saccharomyces cerevisiae*. They are not immunochemically related to two extracellular *Neurospora* nucleases, the pancreatic \*DNase\*-\*I\*-\*like\* DNase A and a



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☐ 1: Mol Reprod Dev 1999 Oct;54(2):145-53[Related Articles, Links](#)

## Purification and characterization of fertility-associated antigen (FAA) in bovine seminal fluid.

McCauley TC, Zhang H, Bellin ME, Ax RL.

PubMed  
Services

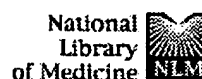
Department of Animal Sciences, University of Arizona, Tucson, Arizona  
85721-0038, USA.

Related  
Resources

Heparin-binding proteins (HBP) recognized by a monoclonal antibody (M1) are produced by male accessory sex glands and bind to distinct regions of ejaculated bull sperm. Immunoblots of sperm proteins probed with M1 identified HBP variants of approximately 31-, 24-, and 21.5-kDa that were associated with increased fertility of bulls. The purpose of this study was to identify the 31-kDa HBP known as fertility-associated antigen (FAA). FAA was isolated by heparin-affinity chromatography and reversed-phase high performance liquid chromatography near homogeneity. Biochemical characterization indicated that FAA was an unglycosylated, basic protein. FAA protein was detected in seminal vesicle and prostate gland homogenates, and FAA extracted from sperm membranes by treatment with hypertonic media was identical biochemically to seminal fluid-derived FAA. N-terminal sequence analysis of purified FAA yielded a 26 amino acid sequence (L K I X S F N V R S F G E S K K A G F N A M R V I V) with 73% identity to a recently identified human deoxyribonuclease (DNase) I-like protein. Two internal amino acid sequences generated from lys-C digested FAA were 85% and 92% identical to the same DNase I-like protein. In conclusion, we have identified a bovine seminal heparin-binding protein that binds to sperm and is indicative of bull fertility as being similar to the family of DNase I-like proteins. These data demonstrate the presence of a novel DNase I-like protein in bull accessory sex glands and form the groundwork for the identification of a candidate genetic marker for fertility of bulls. Copyright 1999 Wiley-Liss, Inc.

PMID: 10471474 [PubMed - indexed for MEDLINE]

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☐ 1: Mol Reprod Dev 2001 Mar;58(3):336-41[Related Articles, Links](#)

## Identification of a heparin-binding protein in bovine seminal fluid as tissue inhibitor of metalloproteinases-2.

McCauley TC, Zhang HM, Bellin ME, Ax RL.

PubMed  
Services

Department of Animal Sciences, University of Arizona, Tucson, Arizona  
85721-0038, USA.

Related  
Resources

Presence or absence of three distinct bovine seminal heparin-binding proteins (21-31 kDa) recognized in sperm extracts by a monoclonal antibody, M1, is a diagnostic indicator of fertility differences among bulls producing normal semen. We recently identified a 31 kDa fertility-associated antigen in bovine seminal fluid as a unique DNase I-like protein. We now report purification and identification of a 24 kDa seminal heparin-binding protein (HBP-24) recognized by M1. N-terminal microsequence analysis of HBP-24 purified from seminal fluid yielded 20 amino acid residues that displayed 90% identity to the N-terminus of a bovine metalloproteinase inhibitor identified as tissue inhibitor of metalloproteinases-2 (TIMP-2). A single immunoreactive band migrating at 24 kDa was detected in Western blots of cauda epididymal sperm extracts following incubation with purified seminal heparin-binding proteins and subsequent washing in vitro, indicating TIMP-2 bound to sperm membranes. Expression of TIMP-2 mRNA was detected by RT-PCR in bovine bulbourethral gland, prostate, and seminal vesicles. Mobility of the 24 kDa heparin-binding protein increased under nonreducing SDS-PAGE to approximately 21 kDa, characteristic of the reported molecular mass of TIMP-2. To our knowledge, this is the first report of TIMP-2 binding to spermatozoa and of TIMP-2 mRNA expression in bovine accessory sex glands. These results corroborate previous reports regarding the site of production of heparin-binding proteins that are related to bull fertility, and suggest that TIMP-2 influences fertility of bulls, either through inhibition of metalloprotease activity in semen or via undefined activities independent of matrix metalloproteinase (MMP) inhibition. Copyright 2001 Wiley-Liss, Inc.

PMID: 11170275 [PubMed - indexed for MEDLINE]

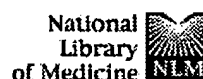
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*DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; THES=ASSIGNEE;  
PLUR=YES; OP=AND*

<u>L5</u>	((DNase adj I) adj like)	6	<u>L5</u>
<u>L4</u>	((fertility adj associated) adj antigen) and (vector or DNA or RNA)	5	<u>L4</u>
<u>L3</u>	((fertility adj associated) adj antigen) same (vector or DNA or RNA)	0	<u>L3</u>
<u>L2</u>	Bellin-mary-E\$.in.	4	<u>L2</u>
<u>L1</u>	Zhang-huanmin.in.	1	<u>L1</u>

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☐ 1: J Anim Sci 1998 Aug;76(8):2032-9[Related Articles, Links](#)

## Fertility-associated antigen on bull sperm indicates fertility potential.

Bellin ME, Oyarzo JN, Hawkins HE, Zhang H, Smith RG, Forrest DW, Sprott LR, Ax RL.

PubMed  
Services

Department of Animal Sciences, University of Arizona, Tucson 85721, USA.

Related  
Resources

A 30-kDa heparin-binding protein named fertility-associated antigen (FAA) was identified in sperm membranes of beef bulls with greater fertility potential. In a survey of 2,191 beef bulls, 88% had FAA present in sperm membranes (FAA-positive), and 12% were FAA-negative. In the first study, 54 Santa Gertrudis and 51 Santa Cruz bulls were grouped (1 to 14 bulls per group) according to FAA profiles and were bred to 2,403 cows at ratios of 1 bull: 25 cows. Fertility for 14 groups of FAA-positive bulls averaged 88%, whereas three groups of FAA-negative bulls impregnated 79% of the cows. Thus, FAA-positive bulls were nine percentage points more ( $P < .01$ ) fertile than FAA-negative bulls. In the second study, 2-yr-old Santa Cruz bulls ( $n = 26$ ) were grouped according to FAA profiles and serving capacity. The fertility of the group of 12 high-serving-capacity, FAA-positive bulls was 87% of 270 cows. The group of six FAA-negative bulls with high serving capacity impregnated 78% of 143 cows. Among the groups of bulls with high serving capacity, FAA-positive bulls were nine percentage points more ( $P < .05$ ) fertile than FAA-negative bulls. The group of eight FAA-positive bulls with low serving capacity impregnated the least ( $P < .01$ ) percentage (69%) of 238 cows. Serving capacity of bulls should be considered when optimizing fertility potential. Among bulls with acceptable physical characteristics and serving capacity, determination of FAA profiles in sperm can be used as a tool to identify subfertile bulls.

PMID: 9734852 [PubMed - indexed for MEDLINE]

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